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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,857	03/05/2002	Masahiro Komatsu	Q68777	8360
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SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
			EXAMINER LEVITAN, DMITRY	
			ART UNIT 2616	PAPER NUMBER

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,857

Applicant(s)

KOMATSU, MASAHIRO

Examiner

Dmitry Levitan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Amendment, filed 9/7/06, has been entered. Claims 1-18 remain pending.

Drawings

The drawings were received on 9/07/06. These drawings are approved.

Specification

In light of Applicant's amendment, the objection to the specification has been withdrawn.

Claim Rejections - 35 USC § 112

1. In light of Applicant's amendment, the rejection of claims 1-18 under 35 USC § 112, second paragraph, set in the Office action of 6/7/06, has been withdrawn.
2. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the transmission state of the CDMA base station" in line

14. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the transmission state of the base station" in line 13.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

1. Claims 1-4, 6, 10-13 and 15 are rejected (as best understood) under 35 U.S.C. 103(a) as being unpatentable over Paulraj (US 6,351,499) in view of Austin (US 6,799,059).

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2. Regarding claims 1, 3, 4, 10, 12 and 13, Paulraj substantially teaches the limitations of the claims.

A CDMA base station and a method (cellular CDMA system 5:11-14, comprising base station 12 and mobile units 14, shown on Fig. 1 and 2 and disclosed on 5:45-6:25), comprising:

at least two transmission antennas (base station 12 comprises numerous transmission antennas 18 A-M),

a receiving portion which receives an up-link signal from a mobile station, comprising a transmission state control indicator (receiving portion shown on Fig. 3 as feedback 64, to receive the feedback signal from a mobile device 14, shown on Fig. 2 and 6:36-49, comprising a quality parameter 6:65-7:7),

a link transmission line state estimation portion which estimates the transmission state of a link with said mobile station from said received signal and produce a command, based on the received indicator (adaptive controller 60 to derive the link quality parameter from the received feedback 6:65-7:7 comprising SINR and estimate the link BER using the data from database 68 7:50-8:22 to issue commands for transmission elements 58, 66, 72 and 74, as shown on Fig. 3 and 7:50-8:40),

a transmission state control portion which controls the transmission state of said CDMA base station and under control of said transmission state control command extracted from the received signal, the estimated transmission state of down-link (control unit 62, comprising adaptive controller 60, to control transmission elements 58, 66, 72 and 74, which defines the transmission state of the base station, communicated from the receiver 6:50-7:7, which is directed to the down-link connection, as disclosed in abstract),

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a transmission portion which receives instruction from the transmission state control portion and performs transmission processing based on the instruction (transmission elements 58, 66, 72 and 74 on Fig. 3 adjusted by instructions from control unit 62 to improve the transmission state 3:53-67),

wherein controlling the transmission state of CDMA base station comprises controlling a use of at least two transmission antennas (adjusting the adaptive antennas beams dynamically as the channel changes to maximize signal quality 2:55-59).

Paulraj does not teach separate estimations of uplink and downlink portions of the link between the base station and the mobile unit.

Austin teaches separate estimations of uplink and downlink portions of the link between the base station and the mobile unit (mobile telephone system comprising a base station with two or more antennas, abstract and Fig. 4, wherein the mobile unit estimates the downlink signal quality 7:7-17 and base station estimated the uplink signal quality 7:30-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add separate estimations of uplink and downlink portions of the link between the base station and the mobile unit of Austin to the system of Paulraj and locate the uplink and downlink estimators at the base station to simplify the mobile station design and improve their power consumption and improve the system estimation operation by separating uplink and downlink quality problems.

In addition, regarding claims 12 and 13, Paulraj inherently teaches demodulation of the received signal, because demodulation of the signal, producing digital data, is essential for obtaining any statistics on the received data.

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3. Regarding claims 2, 6, 11 and 15, Paulraj teaches estimating the transmission state of the link based on the level/power of the received signal (Abstract).

4. Claims 5, 7, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paulraj in view of Austin in view of Sourour (US 6,768,727).

5. Regarding claims 5 and 14, Paulraj in view of Austin substantially teaches the limitations of claims 5 and 14 (see claims 1 and 10 rejection above).

Paulraj in view of Austin does not teach estimating the transmission state based on FER.

Sourour teaches estimating the transmission state based on FER (using target FER as a quality standard for a transmission link 2:5-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add estimating the transmission state based on FER of Sourour to the system of Paulraj in view of Austin to improve the system quality estimation compatible with CDMA standard.

In addition, regarding claim 14, Paulraj inherently teaches demodulation of the received signal, because demodulation of the signal, producing digital data, is essential for obtaining any statistics on the received data.

6. Regarding claims 7 and 16, Paulraj in view of Austin substantially teaches the limitations of the claims (see claims 1 and 10 rejection above), including receiving up-link signal with feedback from the mobile unit.

Paulraj in view of Austin does not teach estimating the transmission line state of said downlink from a transmitted power control command column, contained in the received signal.

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Sourour teaches estimating the transmission state based on a transmitted power control command field, contained in the received signal (estimating/ensuring the channel SIR based on the power control in the reverse link 1:49-57 and sending power control bits to regulate the base station power 2:4-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add estimating the transmission state based on a transmitted power control command of Sourour to the system of Paulraj in view of Austin and put the commands/bits in a column as a design choice, because the commands/bits located in lines will work in the system as well, to improve the system quality estimation compatible with CDMA standard.

7. Claims 8, 9, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paulraj in view of Austin in view of Li (US 6,185,431).

Paulraj in view of Austin substantially teaches the limitations of the claims (see claims 1 and 10 rejection above).

Paulraj in view of Austin does not teach ignoring the control command in a poor condition of the uplink or the downlink, defined by the comparison of the received signal with predetermined thresholds, and controlling the transmission state of the base station, and returning to the acceptance of the control command when the link condition improves.

Li teaches ignoring the power control command in a poor condition of the link, defined by the comparison of the received signal with predetermined thresholds and controlling the transmission state of the base station, and returning to the acceptance of the power control command when the link condition improves (ignoring the power control signals when the channel is weak to avoid erroneous interpretation as shown on Fig. 7 and Abstract, see ignore

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control command 630, when the received signal is lower predetermined power control threshold, shown on Fig. 1 and 6:40-62 and transmitting new threshold to the mobile station 2:35-47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add ignoring the control command in a poor condition of the uplink or the downlink, controlling the transmission state of the base station in that link condition and returning to the acceptance of the control command when the link condition improves of Li to the system of Paulraj in view of Austin to improve the system operation in noisy or poor link environment.

Response to Arguments

8. Applicant's arguments filed 9/07/06 have been fully considered but they are not persuasive.

On pages 17-18 of the Response, Applicant argues that there is no suggestion in the Paulraj teaching to determine any state of up-link.

Examiner respectfully disagrees.

Paulraj clearly states that the method disclosed for the down-link, can be used in up-link communications 5:55-57.

On pages 17-18 of the Response, Applicant argues that there is no suggestion in Austin of using both up-link and down-link quality information to control a transmission state.

Examiner respectfully disagrees.

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Austin system, shown on Fig. 1 and 2, 1:15-30, is a telephone system which is inherently bi-directional, therefore making the conditions of up-link as important for the communication as the disclosed condition of the down-link.

The importance of both directions of the telephone communication clearly suggests using both up-link and down-link for quality control.

On page 18 of the Response, Applicant argues that Paulraj does not teach modifying any control of the transmission antennas of the transmit unit.

Examiner respectfully disagrees.

Paulraj clearly teaches to dynamically adjust the transmit antennas beams in response of the channel changes to improve the channel quality 2:54-63.

Therefore Paulraj teaches modifying the control of the transmission antennas.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dmitry Levitan whose telephone number is (571) 272-3093. The examiner can normally be reached on 8:30 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (571) 272-7529. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Handwritten signature of Dmitry Levitan, consisting of the letters 'DL' followed by a stylized cursive signature.

Dmitry Levitan
Examiner
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